



TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
DIVISION OF AIR POLLUTION CONTROL  
Nashville Environmental Field Office  
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Nashville, TN 37216  
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May 5, 2016

Lynne Liddington  
Knox County Air Quality Management Division  
140 Dameron Ave Suite 242  
Knoxville, TN 37917

Reference: First Quarter 2016 Performance Audits

Dear Ms. Liddington:

The following pages contain the results from performance audits conducted by personal from Tennessee's Air Quality Assurance Section on March 9<sup>th</sup> and 10<sup>th</sup> of this year. The performance audit results are grouped by location. The audits were performed on ozone analyzers and particular monitors throughout Knox County. All of the monitors audited showed satisfactory correlation with our audit standards. All measured parameters were within acceptable limits in accordance with the federal regulations stated in 40CFR. The audit yielded no recommendations at this time. The results were noted in the instrument log books as well as stated in this report. I will contact Amber to schedule our next audit at a later time.

If we can be of any further assistance or should there be questions regarding this audit, please email at [Lance.Allen@tn.gov](mailto:Lance.Allen@tn.gov) or call (615)687-7040.

Sincerely,

D. Lance Allen  
Environmental Consultant  
Quality Assurance Section

CC: A. Talgo, Knox CO, R. Brawner APC, J. Stephens APC,

**Tennessee Department of Environment and Conservation**  
**Air Pollution Control / Quality Assurance Section**

**Site: Breaden 47-093-0028**

**To: Lynne Liddington**

**From: Lance Allen**

**Subject: Quality Assurance Performance Audit**

On March 9<sup>th</sup>, 2016, personnel from the Quality Assurance section conducted performance audits on selected ambient air monitors. The following is a summary of the parameters and values measured.

Site & Instrument 47-093-0028	Measured Parameter	Audit Value	Monitor Display	Difference	Acceptable Range
<b>Breaden #1</b> R & P 2025 serial#21894	Current Time	13:50:20 est	13:50:00 est	-20 sec	+/-1 min
	Ambient Temp.	27.0°C	26.5°C	-0.5°C	+/-2°C
	Filter Temp.	28.5°C	29.1°C	0.6°C	+/-2°C
	Comp. Temp.	27.8°C	27.7°C	-0.1°C	+/-2°C
	Bar. Press.	735 mm	735 mm	0 mm	+/-10mm
	Trans. Std. Flow	16.55 lpm	16.61 lpm	0.7%	+/-4%
	Design Flow	16.67 lpm	16.61 lpm	-0.4%	+/-5%
<b>Breaden #2</b> R & P 2025 serial#21893	Current Time	13:59:00 est	13:58:38 est	-22 sec	+/-1 min
	Ambient Temp.	26.0°C	25.5°C	-0.5°C	+/-2°C
	Filter Temp.	27.9°C	27.4°C	-0.5°C	+/-2°C
	Comp. Temp.	27.2°C	26.2°C	-1.0°C	+/-2°C
	Bar. Press.	737 mm	737 mm	0 mm	+/-10mm
	Trans. Std. Flow	16.71 lpm	16.70 lpm	-0.6%	+/-4%
	Design Flow	16.67 lpm	16.70 lpm	0.2%	+/-5%

**Remarks:**

1. All measured parameters were within acceptable limits.
2. PM 10 inlets, cyclones, and cabinet interiors were clean.
3. Log books were present, activities noted and dated with initials.

**Recommendations:**

1. None.

If we can be of any further assistance or should there be questions regarding this audit, please email or call.

Lance.Allen@tn.gov

(615) 687-7040

BR030916

cc: A. Talgo, Knox CO, R. Brawner, APC J. Stephens, APC

**\*Streamline Pro (S#CU06054) and web site [www.time.gov](http://www.time.gov) were used by Quality Assurance personal to conduct this audit.**

**Tennessee Department of Environment and Conservation**  
**Air Pollution Control / Quality Assurance Section**

**Site:** Ameristeel 47-093-0031  
**To:** Lynne Liddington  
**From:** Lance Allen  
**Subject:** Quality Assurance Performance Audit

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On March 9<sup>th</sup>, 2016, personnel from the Quality Assurance section conducted performance audits on selected ambient air monitors. The following is a summary of the parameters and values measured.

Site & Instrument 47-093-0031	Measured Parameter	Audit Value	Monitor Display	Difference	Acceptable Range
Ameristeel TSP serial#P04304	Trans. Std. Flow	39.13 sf <sup>3</sup> /m	39.43 sf <sup>3</sup> /m	0.7%	+/-7%

**Remarks:**

1. All measured parameters were within acceptable limits.
2. Log books were present, activities noted and dated with initials.

**Recommendations:**

1. None.

If we can be of any further assistance or should there be questions regarding this audit, please email or call.  
Lance.Allen@tn.gov  
(615) 687-7040

AM030916

cc: A. Talgo, Knox CO, R. Brawner, APC J. Stephens, APC

**\*Streamline Pro (S#CU06054), High Volume Orifice # 10337 were used by Quality Assurance personal to conduct this audit.**

**Tennessee Department of Environment and Conservation**  
**Air Pollution Control / Quality Assurance Section**

**Site:** Burnside 47-093-0027  
**To:** Lynne Liddington  
**From:** Lance Allen  
**Subject:** Quality Assurance Performance Audit

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On March 9<sup>th</sup>, 2016, personnel from the Quality Assurance section conducted performance audits on selected ambient air monitors. The following is a summary of the parameters and values measured.

Site & Instrument 47-093-0027	Measured Parameter	Audit Value	Monitor Display	Difference	Acceptable Range
Burnside Official TSP serial#P02875	Trans. Std. Flow	39.64 sf <sup>3</sup> /m	39.12 sf <sup>3</sup> /m	-1.3%	+/-7%
Burnside Co located TSP serial#P04302	Trans. Std. Flow	39.98 sf <sup>3</sup> /m	39.05 sf <sup>3</sup> /m	-2.1%	+/-7%

**Remarks:**

1. All measured parameters were within acceptable limits.
2. Log books were present, activities noted and dated with initials.

**Recommendations:**

1. None.

If we can be of any further assistance or should there be questions regarding this audit, please email or call.  
Lance.Allen@tn.gov  
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BU030916

cc: A. Talgo, Knox CO, R. Brawner, APC J. Stephens, APC

**\*Streamline Pro (S#CU06054), High Volume Orifice # 10337 were used by Quality Assurance personal to conduct this audit.**

**Tennessee Department of Environment and Conservation**  
**Air Pollution Control / Quality Assurance Section**

**Site:** Knoxville East 47-093-0021

**To:** Lynne Liddington

**From:** Lance Allen

**Subject:** Quality Assurance Performance Audit

On March 9, 2016, personnel from the Quality Assurance section conducted performance audits on selected ambient air monitors. The following is a summary of the parameters and values measured.

Site& Instrument 47-093-0021	Parameter	Audit Point	Monitor Response	Difference	Acceptable Range
East Knox/Teledyne 400e/serial# 2259	Ozone (O3)	.075ppm	.074ppm	-1.3%	15%
		.055	.054	-1.8%	15%
		.036	.036	0.0%	15%
		.000	.000	.000ppm	+/- .005ppm
Data Logger ESC 8832S#A6757K#2	Lab Temp	26.0°C	25.1°C	-0.9°C	+/-2°C
	Time	10:29:00	10:28:44	-16sec	

**Remarks:**

1. The monitor audited showed satisfactory correlation with our audit standards.
2. The site was very clean; log books were present and properly noted.

**Recommendations:**

1. None.

If we can be of any further assistance or should there be questions regarding this audit, please email or call.

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KE030916

**cc:** A. Talgo, Knox CO  
R. Brawner, APC  
J. Stephens, APC

\*EnviroNics 6103 (#3081), Streamline Pro (#CU06054), and web site [www.time.gov](http://www.time.gov) were used by Quality Assurance personal to conduct this audit.

**Tennessee Department of Environment and Conservation**  
**Air Pollution Control / Quality Assurance Section**

**Site:** Rule 47-093-1017

**To:** Lynne Liddington

**From:** Lance Allen

**Subject:** Quality Assurance Performance Audit

On March 9<sup>th</sup>, 2016, personnel from the Quality Assurance section conducted performance audits on selected ambient air monitors. The following is a summary of the parameters and values measured.

Site & Instrument 47-093-1017	Measured Parameter	Audit Value	Monitor Display	Difference	Acceptable Range
Rule 2025 serial#22654	Current Time	14:52:32 est	14:52:00 est	-32 sec	+/-1 min
	Ambient Temp.	24.4°C	24.8°C	0.4°C	+/-2°C
	Filter Temp.	26.5°C	25.8°C	-0.7°C	+/-2°C
	Comp. Temp.	27.5°C	27.8°C	0.3°C	+/-2°C
	Bar. Press.	732 mm	731 mm	-1 mm	+/-10mm
	Trans. Std. Flow	16.46 lpm	16.70 lpm	1.5%	+/-4%
	Design Flow	16.67 lpm	16.70 lpm	0.2%	+/-5%
Rule TSP serial#P1938	Trans. Std. Flow	38.21 sf <sup>3</sup> /m	39.57 sf <sup>3</sup> /m	3.6%	+/-7%

**Remarks:**

1. All measured parameters were within acceptable limits.
2. PM 10 inlets, cyclones, and cabinet interiors were clean.
3. Log books were present, activities noted and dated with initials.

**Recommendations:**

1. None.

If we can be of any further assistance or should there be questions regarding this audit, please email or call.

Lance.Allen@tn.gov

(615) 687-7040

RU030916

cc: A. Talgo, Knox CO, R. Brawner, APC J. Stephens, APC

**\*Streamline Pro (S#CU06054), High Volume Orifice # 10337 and web site [www.time.gov](http://www.time.gov) were used by Quality Assurance personal to conduct this audit.**

**Tennessee Department of Environment and Conservation**  
**Air Pollution Control / Quality Assurance Section**

**Site:** Air Lab 47-093-1013

**To:** Lynne Liddington

**From:** Lance Allen

**Subject:** Quality Assurance Performance Audit

On March 10<sup>th</sup>, 2016, personnel from the Quality Assurance section conducted performance audits on selected ambient air monitors. The following is a summary of the parameters and values measured.

Site & Instrument 47-093-1013	Measured Parameter	Audit Value	Monitor Display	Difference	Acceptable Range
Air Lab Thermo 2025 serial#21892	Current Time	11:21:00 est	11:20:36 est	-24 sec	+/-1 min
	Ambient Temp.	24.3°C	24.4°C	0.1°C	+/-2°C
	Filter Temp.	25.7°C	24.6°C	-1.1°C	+/-2°C
	Comp. Temp.	26.0°C	26.0°C	0.0°C	+/-2°C
	Bar. Press.	737 mm	737 mm	0 mm	+/-10mm
	Trans. Std. Flow	16.80 lpm	16.70 lpm	-0.6%	+/-4%
	Design Flow	16.67 lpm	16.70 lpm	0.2%	+/-5%
Thermo Beta 5014i Serial#cm14521015	Current Time	12:29:37 est	12:29:00 est	-37 sec	+/-5 min
	Ambient Temp.	25.2°C	24.8°C	-0.4°C	+/-2°C
	Bar. Press.	736 mm	735 mm	-1 mm	+/-10mm
	Trans. Std. Flow	16.71 lpm	16.63 lpm	-0.5%	+/-10%
Teom 1405 serial # 20953	Current Time	12:09:18 est	12:08:40 est	-38 sec	+/-5 min
	Ambient Temp.	24.1°C	24.1°C	0.0°C	+/-2°C
	Bar. Press.	736 mm	734 mm	-2 mm	+/-10mm
	Main Flow	3.09 lpm	3.00 lpm	-2.9%	+/-4%
	By Pass Flow	13.45 lpm	13.67 lpm	1.4%	+/-4%
	Total Flow	16.43 lpm	16.67 lpm	1.5%	+/-4%
	Design Flow	16.67 lpm	16.67 lpm	0.0%	+/-5%
PM10s# P03619	Trans. Std. Flow	39.25 sf <sup>3</sup> /m	39.03 sf <sup>3</sup> /m	-0.6%	+/-7%
	Design Flow	1.13 m <sup>3</sup> /m	1.14 m <sup>3</sup> /m	0.9	+/-10%
PM10s#999/lab/C	Trans. Std. Flow	39.17 sf <sup>3</sup> /m	39.47 sf <sup>3</sup> /m	0.7%	+/-7%
	Design Flow	1.13 m <sup>3</sup> /m	1.15 m <sup>3</sup> /m	1.8%	+/-10%

**Remarks:**

1. The monitors audited showed satisfactory correlation with our audit standards.
2. All measured parameters were within acceptable limits.
3. PM 10 inlets, cyclones, and cabinet interiors were clean.
4. Log books were present, activities noted and dated with initials.

**Recommendations:**

1. None.

If we can be of any further assistance or should there be questions regarding this audit, please email or call.

Lance.Allen@tn.gov

(615) 687-7040

AL031016

cc: A. Talgo, Knox CO, R. Brawner, APC, J. Stephens, APC \*Streamline Pro (S#CU06054), High Volume Orifice S#10337 and web site www.time.gov were used by Quality Assurance personal to conduct this audit.

**Tennessee Department of Environment and Conservation**  
**Air Pollution Control / Quality Assurance Section**

**Site:** Springhill 47-093-1020

**To:** Lynne Liddington

**From:** Lance Allen

**Subject:** Quality Assurance Performance Audit

On March 9<sup>th</sup> and 10<sup>th</sup>, 2016, personnel from the Quality Assurance section conducted performance audits on selected ambient air monitors. **Springhill ozone audit was conducted on the 10<sup>th</sup> of March.** The following is a summary of the parameters and values measured.

Site & Instrument 47-093-1020	Measured Parameter	Audit Value	Monitor Display	Difference	Acceptable Range
Springhill/Teledyne 400c/serial# 2014 <b>Conducted on 3-10-16</b>	O3 Ozone	.000ppm	.001ppm	.001ppm	+/- .005ppm
		.080	.079	-1.2%	+/-15%
		.060	.060	0.0%	+/-15%
		.037	.036	-2.7%	+/-15%
Data Logger ESC 8832 #2 S#A3758K	Lab Temp	25.3°C	25.2°C	-0.1°C	+/-2°C
	Current Time	10:02:15est	10:02:00est	-15 sec	
Thermo 2025 serial#21892 <b>Conducted on 3-9-16</b>	Current Time	11:09:32 est	11:09:10 est	-22 sec	+/-1 min
	Ambient Temp.	20.0°C	20.4°C	0.4°C	+/-2°C
	Filter Temp.	21.8°C	20.3°C	-1.5°C	+/-2°C
	Comp. Temp.	22.5°C	23.3°C	0.8°C	+/-2°C
	Bar. Press.	737 mm	736 mm	-1 mm	+/-10mm
	Trans. Std. Flow	16.44 lpm	16.70 lpm	1.6%	+/-4%
	Design Flow	16.67 lpm	16.70 lpm	0.2%	+/-5%
URG S#3n-b0193/3n- b0224 <b>Conducted on 3-9-16</b>	Current Time	11:48:08 est	11:49:00 est	52 sec	+/-5 min
	Ambient Temp.	21.7°C	21.6°C	-0.1°C	+/-2°C
	Bar. Press.	736.5 mm	737.5 mm	1.0 mm	+/-10mm
	Leak Check	461 mm	474 mm	13/Pass	225 mm
	Trans. Std. Flow	22.90 lpm	22.05 lpm	-3.7%	+/-10%
Super Sass S#g9188/g9148 <b>Conducted on 3-9-16</b> *BGI used	Current Time	11:22:41 est	11:21:00 est	-41 sec	+/-5 min
	Ambient Temp.	20.5°C	20.7°C	0.2°C	+/-2°C
	Filter Temp.	22.0°C	22.2°C	0.2°C	+/-2°C
	Bar. Press.	737 mm	734 mm	-3 mm	+/-10mm
	Leak Check Ch1	0.0 lpm	0.0 lpm	0.0 lpm	0.1 lpm
	Leak Check Ch2	0.0 lpm	0.0 lpm	0.0 lpm	0.1 lpm
	T.Std. Flow Ch.1	6.96 lpm	6.7 lpm	-3.7%	+/-10%
	T.Std. Flow Ch.2	6.91 lpm	6.7 lpm	-3.0%	+/-10%



**Remarks:**

1. The monitors audited showed satisfactory correlation with our audit standards.
2. All measured parameters were within acceptable limits.
3. PM 10 inlets, cyclones, and cabinet interiors were clean.
4. Log books were present, activities noted and dated with initials.
5. BGI TriCal was used to perform audit on the URG.

**Recommendations:**

1. None.

If we can be of any further assistance or should there be questions regarding this audit, please email or call.

Lance.Allen@tn.gov

(615) 687-7040

SH030916

cc: A. Talgo, Knox CO  
R. Brawner, APC  
J. Stephens, APC

**\*Streamline Pro (S#CU06054), BGI TriCal (S#162), Environics 6103 (S#3081) and web site [www.time.gov](http://www.time.gov) were used by Quality Assurance personal to conduct this audit.**